REMARKS

Applicant has corrected typographical errors in the Specification. Attached hereto is an unmarked version of the changes made to the Specification by the current amendment. The attached page is captioned "Version Without Markings of Changes Made." In addition, Applicant has submitted revised claims. The claims are revised in a manner which is believed to obviate the objections raised pursuant to 35 USC Section 112. Specifically, the claims relate to the combination of a series of steps to provide an improved method for marking the outside of glass containers. As a first step, the glass item is chosen, and the coefficient of thermal expansion is identified. Second, a portion or area of the vial is coated with a ceramic coating material or paint. The ceramic coating material has a coefficient of thermal expansion which matches the thermal expansion of the glass item or container.

Next, a portion only of the area coated with the ceramic coating material is imprinted with indicia by means of a laser. Thus, the total ceramic coating area remains on the outside of the glassware. Indicia are then imprinted on only a portion of the ceramic coating. The indicia are imprinted by a laser which causes the imprinted portion of the coating contacted by the laser beam to change color and define a visible, machine readable indicia, e.g. bar code. As a consequence, the item, such as a glass vial, maintains an area coated by the ceramic coating, but within a portion of that area, indicia are imprinted by the laser interaction with the ceramic coating material. The coating material remains on the item, but there is a visible contrast between the indicia imprinted as a result of the laser activity and the remainder of the coating.

As a consequence of the invention, the ceramic coating which has not been altered in color remains on the outside of the glassware. Thus, the coating material remains as a patch covering the area originally applied to the item with only portions of the coating altered in color to facilitate identification of that which is in the glass vial or item.

Numerous benefits result. The ceramic coating is substantially scratchproof,, solvent proof, resistant to acid and basic solutions, and to temperature extremes. The matched thermal expansion coefficients facilitate these benefits. Further, the coating does not change weight as would an absorbent material such as a paper label or adhesive label. Finally, a background color associated with the ceramic "patch" insures visibility and ease of reading of the code "indicia".

The subject matter of the present invention as set forth in the amended claims is thus clearly distinguishable from the prior art reference Harrison, for example. The Harrison reference teaches the concept of applying a material onto a substrate. The material is then contacted by a laser beam to effect bonding of a portion of the coating to the substrate. The remainder of the substrate is then dissipated, washed away or otherwise removed. This is a significant difference from the present application wherein the substrate area remains bonded and covers a certain area of the glassware. Then the indicia imprinted on the ceramic coating patch are created by altering the color of a portion of the coating due to the laser activity. As a consequence, the approach utilized by the present applicant is significantly different from that taught by the prior art references.

In view of the foregoing, therefore, it is believed that the claims in their amended condition are allowable. Passage to allowance is earnestly solicited.

Respectfully submitted,

BANNER & WITCOFF, LTD.

Dated: March 10, 2004

By: 

Jon O. Nelson
Reg. No. 24,566

Banner & Witcoff, Ltd.
Ten South Wacker Drive, Suite 3000
Chicago, Illinois 60606
Telephone: 312/463-5000
309373

VERSION WITHOUT MARKINGS OF CHANGES MADE

Page 4, line 18 – page 5, line 16:

A laboratory container such as a glass vial is chosen and the coefficient of thermal expansion of the glass is determined. In general coefficient of expansion for lab glass is called 33 and 51 type. Thereafter a ceramic based paint and preferably a white ceramic based paint such as used in ceramic glass decorating and which has a coefficient of thermal expansion substantially the same as the glass is applied to a predetermined geometric area of the glass container. An example of a container having such a coating in a certain fixed area of the glass container is provided by the firm of Kimble Kontes and Wheaton Scientific Co. in New Jersey.

Alternatively, glassware may have white colored ceramic paint applied thereto, for example, by screen printing, pad printing, or spray printing wherein the ceramic paint is fired once applied at a temperature in the range of about 1100° F to enhance chemical bonding to the glass. Preferably nonlead ceramic paints are utilized inasmuch as they are believed to be preferred for laboratory use and in the laboratory environment. Nonlead ceramic paints will change color from a white color to a brown color when exposed to a laser beam. The resultant brown color is stable and inert. Further, the area of such a white ceramic nonlead paint when not exposed to a laser will remain as a white color. Glass containers with nonlead ceramic paint which are white in color can be supplied by Morgan Meredith, Inc.

Page 6, lines 5 – 16:

Once having obtained the glassware, or glass apparatus having an area with a ceramic paint

coating, the coating is exposed to a laser beam. Various types of laser beams may be utilized. The beam is, however, focused upon the ceramic patch or layer and a bar code, numeric code, or alphabetic code or combinations thereof may be printed on the label. The laser beam interacts with the ceramic coating causing it to change color. An example of such a laser beam device is made by Domino and identified as CO_2 laser coder GGM-1S with a 125 mm lens. The laser power setting for such a device may be varied from 1 percent to 90 percent. For example, the above identified laser may be set at 7 percent power for a glass tube wherein the movement of the beam is at 3 inches per second with a resolution of 150. The laser coding device is preferably equipped with appropriate software package for sequential and one dimensional and two dimensional bar codes.

Page 7, lines 3 – 16:

By using the invention paper, film, and other adhesive bonded labels are no longer required. The labeling approach is solvent free, caustic free, temperature independent and scratchproof, inexpensive, and quick, easily automated and not subject to weight change. The labels will, in effect, remain intact and permanent after autoclaving or subjected to other chemical, heat, or pressure processing. Storage at various temperatures is also possible with such labeling. Additionally, large expanses of space are not required to provide a legible and easily used label area. Labels can be located on bottoms, caps, and other small areas of a container not easy with paper adhesive labels. With the process of the invention, the ceramic paint may be applied to the container just shortly before application of the laser energy thereto for ease of automation. This provides for greater flexibility with respect to the use and utility of the containers. The labels are thin and will not rub off

of the container or alter dimensions thereby enabling use of items so labeled in automated equipment lines without special adjustment.